



US005738977A

**United States Patent** [19][11] **Patent Number:** **5,738,977****Van Der Sluis-Van Der Voort et al.**[45] **Date of Patent:** **Apr. 14, 1998**

[54] **METHOD OF PHOTOLITHOGRAPHICALLY PRODUCING A COPPER PATTERN ON A PLATE OF AN ELECTRICALLY INSULATING MATERIAL**

4,814,205 3/1989 Arcilesi et al. .... 427/305  
5,235,139 8/1993 Bengston ..... 174/257  
5,474,798 12/1995 Larson ..... 427/58

[75] **Inventors:** **Elisabeth Van Der Sluis-Van Der Voort; Sigrid M.R. Gelderland**, both of Eindhoven, Netherlands

**FOREIGN PATENT DOCUMENTS**

0464937 1/1992 European Pat. Off. .  
0539714 5/1993 European Pat. Off. .  
0562670 9/1993 European Pat. Off. .  
0577187 1/1994 European Pat. Off. .  
3443471 1/1987 Germany .

[21] **Appl. No.:** **796,357**

[22] **Filed:** **Feb. 7, 1996**

*Primary Examiner*—Kathleen Duda

*Attorney, Agent, or Firm*—Robert J. Kraus

**Related U.S. Application Data**

[63] Continuation of Ser. No. 420,963, Apr. 13, 1995, abandoned.

**Foreign Application Priority Data**

Apr. 28, 1994 [EP] European Pat. Off. .... 94201170

[51] **Int. Cl.<sup>6</sup>** ..... **G03F 7/00**

[52] **U.S. Cl.** ..... **430/313; 430/318; 427/58; 427/123**

[58] **Field of Search** ..... **430/311, 313, 430/314, 318; 427/58, 96, 98, 123**

**References Cited****U.S. PATENT DOCUMENTS**

3,240,684 3/1966 Martin .

**[57] ABSTRACT**

A method of forming copper patterns on a selection plate for a display, the selection plate having a plurality of holes. The method provides copper patterns that form selected tracks on the selection plate and that are disposed internally of selected holes, the copper patterns being sealed with a corrosion-resistant layer of nickel-phosphorous. The method includes steps of forming a copper layer on at least one surface of the selection plate, forming a layer of nickel-boron on the copper layer, using cataphoretic lithographic processing to form the desired patterns, and providing a nickel-phosphorous layer to seal the patterns.

**20 Claims, 1 Drawing Sheet**